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EXAMINER

NGUYEN, CAM N

ART UNIT

PAPER NUMBER

1754

9

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-9

Office Action Summary

Application No.
09/623,975

Applicant(s)
Fuglerud et al.

Examiner
Cam Nguyen

Art Unit
1754



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on May 20, 2003 (an amendment/response).
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above, claim(s) 30-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

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DETAILED ACTION

1. Applicants' remarks and amendments, filed on 5/20/03, have been carefully considered.

Claims 1-20 have been canceled. New claims 21-40 have been added.

Claims 21-40 are now pending in this application.

2. Newly submitted claims 21-40 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

In accordance with the restriction requirement under rule 35 U.S.C. 121, the claims are divided into 3 groups as follows.

- I. Claims 21-29, drawn to an ammonia synthesis catalyst, classified in class 502, subclass 328+.
- II. Claims 30-35, drawn to a method of producing an ammonia synthesis catalyst, classified in class 502, subclass 104+.
- III. Claims 36-40, drawn to a process for the catalytic synthesis of ammonia using the catalyst, classified in class 423, subclass 352+.

The inventions are distinct, each from the other because:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be

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made by another and materially different process (MPEP § 806.05(f)). In the instant case, the process as claimed can be used to make other and materially different product, such as refractory inorganic metal oxides, i.e., ceramics, alumina, silica, etc.

Inventions I and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the product as claimed can be used in a materially different process of using that product, such as in the purification of automotive exhaust gases or in the hydrocarbon conversion processing.

Inventions II and III are related as process of making and process of using the product. The use as claimed cannot be practiced with a materially different product. Since the product is not allowable, restriction is proper between said method of making and method of using. The product claim will be examined along with the elected invention (MPEP § 806.05(I)).

Since the product claims are not found allowable, the restriction between these 3 groups is maintained.

3. This application contains claims 30-40 are drawn to an invention nonelected with traverse in Paper No. 8. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

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Claim Objections

4. Claims 22 & 24-28 are objected to because of the following informalities:

- A. In claim 22, line 3, "potassium" should be --potassium metal--.
- B. In claim 22, line 4, "calcium" should be --calcium metal--.
- C. In claim 22, line 5, "magnesium" should be --magnesium metal--.
- D. In claim 22, line 6, "being" should be --is--.
- E. In claim 24, line 3, "potassium" should be --potassium metal--.
- F. In claim 24, line 4, "calcium" should be --calcium metal--.
- G. In claim 24, line 5, "magnesium" should be --magnesium metal--.
- H. In claim 24, line 6, "being" should be --is--.
- I. In claim 25, line 1, "comprising:" should be --comprising--.
- J. In claim 26, line 3, "potassium" should be --potassium metal--.
- K. In claim 26, line 4, "calcium" should be --calcium metal--.
- L. In claim 26, line 5, "magnesium" should be --magnesium metal--.
- M. In claim 27, line 3, "potassium" should be --potassium metal--.
- N. In claim 27, line 4, "calcium" should be --calcium metal--.
- O. In claim 27, line 5, "magnesium" should be --magnesium metal--.
- P. In claim 27, line 6, "being" should be --is--.
- Q. In claim 28, line 1, "which" should be deleted.

Appropriate correction is required.

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Claim Rejections - 35 USC § 112 (Second Paragraph)

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 21-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claims 21 & 25 recite the limitation "cobalt metal" in line 3. There is insufficient antecedent basis for this limitation in the claim. The claims recite "cobalt" in the form of an oxide not a metal.

B. Claims 21 & 25 recite the limitation "titanium metal" in line 4. There is insufficient antecedent basis for this limitation in the claim. The claims recite "titanium" in the form of an oxide not a metal.

C. Regarding claims 22, 24, 26, & 27, recitation of "aluminum metal", "potassium metal", "calcium metal", "magnesium metal" in the claims also lack of sufficient antecedent basis because the independent claims 21 & 25 recite "aluminum", "potassium", "calcium", and "magnesium" as oxides not metals.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 21, 25, & 28 are rejected under 35 U.S.C. 103(a) as obvious over Senes et al., "hereinafter Senes", (U.S Pat. 3,839,229) *in view of* Muenger et al., "hereinafter Muenger", (US Pat. 4,197,281).

Senes discloses an ammonia synthesis catalyst which constituted essentially, in the oxidized state, of magnetite Fe_3O_4 , with which are associated a plurality of promoters, i.e., at least three thereof, including the alumina (Al_2O_3), magnesia (MgO), lime (CaO), and potassium oxide (K_2O). The catalyst also contains cobalt, which can be in the form of oxide, and in the amount of between 5 and 10 percents, calculated as the cobalt metal. See col. 2, ln 42-65.

Senes does not disclose titanium oxide. It would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have incorporated the titanium oxide into the catalyst of Senes in order to achieve an improved catalyst having promoted activity, because titanium dioxide is a known and useful promoter for the ammonia synthesis catalysts as evidenced by Muenger (see Muenger at col. 9, ln 55).

Senes does not disclose the claimed cobalt amount. It would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have optimized the cobalt concentration in Senes in order to achieve an effective catalyst since the optimization

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of such cobalt amount involves only within routine experimentation of one having the ordinary skill in the art, see *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

While Muenger does not disclose the titanium oxide concentration, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have predetermined the titanium oxide promoter amount sufficient for promoting the activity of the catalyst since such predetermination involves only within routine experimentation of one having the ordinary skill in the art, see *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

9. Claims 22-24, 26-27, & 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As concern with claims 23 & 29, the prior art does not disclose or fairly suggest an ammonia synthesis catalyst containing the claimed metal oxides as specified in claim 21 requiring the cobalt metal concentration of from 0.1 to 3.0 wt.% and titanium metal concentration of from 0.1 to 1.0 wt.% and wherein the iron oxides having the atomic ratio of $\text{Fe}^{+2}/\text{Fe}^{+3}$ of between 0.5 to 0.65.

As concern with claims 22, 24, 26, & 27, the prior art does not disclose or fairly suggest an ammonia synthesis catalyst containing the claimed metal oxides and concentrations.

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Response to Amendment/Arguments

10. Applicants' amendment/response filed on 5/20/03 has been considered, but not deemed persuasive in view of the new ground of rejections above and the following reasons.

Applicants urged, that a combination of the references as applied is improper is noted. It is not found persuasive because both references teach catalysts for ammonia synthesis, thus provides one of ordinary skill in the art the motivation to combine the teachings of the references together. It should be noted that the rejection was based on a combination of the references together and that the Muenger reference (secondary reference) was relied on by the examiner to show that the titanium oxide is a known and useful catalyst promoter.

Applicants' further urging regarding the cobalt concentration is also noted. It is considered the cobalt concentration disclosed by the Senes reference can be optimized at the time the invention was made to obtain an effective catalyst because applicants have not yet shown why the cobalt concentrations of the Senes reference cannot be optimized or applicants' specification page 6, Table II only provides catalytic results for the cobalt concentration (invention) of from 0.1 to 3.0 wt.% vs. cobalt concentration (reference) of 0 wt.%, but there is no comparative ^{data} for the cobalt concentration of higher than 3.0 wt.%.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

12. Claims 21-40 are pending. Claims 21-29 are rejected. Claims 30-40 are withdrawn due to nonelected (distinct) invention. No claims are allowed.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Cam Nguyen, whose telephone number is (703) 305-3923. The examiner can normally be reached on M-F from 8:30 am. to 6:00 pm, with alternative Monday off.

The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 (before finals) and (703) 872-9311 (after-final).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Cam Nguyen

Patent Examiner

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Nguyen/cnn *cnn*

August 11, 2003